

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (original). A stage for precise linear motion of a workpiece in at least one dimension, said stage comprising:

at least one hardened steel linear guideway for physical contact with a bearing, said guideway comprising at least one flat surface having a thickness greater than about 100 microns and less than about 10 millimeters;

a chassis comprising a material having a bulk density no greater than about 6 g/cc, and having a specific stiffness at least 50 percent greater than that of said hardened steel linear guideway, said chassis furthermore comprising at least one land for receiving and supporting said guideway; and said guideway attached to said chassis at said land.

Claim 2 (original). The stage of claim 1, wherein said material of said chassis comprises a metal matrix composite material.

Claim 3 (original). The stage of claim 2, wherein said metal matrix composite material comprises silicon carbide distributed in a matrix comprising aluminum.

Claim 4 (original). The stage of claim 1, wherein said guideway is attached to said chassis by at least one of soldering and brazing.

Claim 5 (original). The stage of claim 1, wherein said material of said chassis has a bulk density no greater than about 5 g/cc, and said stage is for use in a semiconductor wirebonding apparatus.

Claim 6 (currently amended). A macrocomposite gib, comprising:

at least two linear guideways arranged with respect to one another so as to define a bearing race, at least one of said linear guideways comprising a macrocomposite guideway comprising (i) a hardened steel surface element adjacent said bearing race, and (ii) a lightweight composite substrate permanently adhered to and supporting said hardened steel surface element, said substrate having a bulk density no greater than about 6 g/cc and a specific stiffness at least 50 percent greater than that of said hardened steel surface element; and

at least one bearing element disposed in said bearing race.

Claim 7 (canceled).

Claim 8 (original). A macrocomposite linear guideway, comprising:

a substrate body comprising a composite material;  
a hardened steel body comprising at least one surface to be in physical contact with a bearing, and at least one surface other than said physical contact surface, said at least one other surface to be a bonding surface; and  
a bond attaching said hardened steel body to said substrate body at said bonding surface.

Claim 9 (original). The linear guideway of claim 8, wherein said composite material comprises a network structure comprising silicon carbide, and a phase comprising elemental or alloyed silicon distributed throughout said network structure.

Claim 10 (original). The linear guideway of claim 8, wherein said composite material comprises at least one metal in elemental or alloyed form selected from the group consisting of aluminum, beryllium, magnesium and silicon.

Claim 11 (original). The linear guideway of claim 8, wherein said hardened steel body comprises tool steel.

Claim 12 (original). The linear guideway of claim 8, wherein said bond is realized by means of a solder.

Claim 13 (original). The linear guideway of claim 8, wherein said composite material comprises at least one material selected from the group consisting of a ceramic matrix composite and a metal matrix composite.

Claim 14 (original). The linear guideway of claim 13, wherein said metal matrix composite material comprises a ceramic particulate reinforced aluminum.

Claim 15 (original). The linear guideway of claim 14, wherein said ceramic particulate comprises at least one material selected from the group consisting of silicon carbide, boron carbide, aluminum oxide and aluminum nitride.

Claim 16 (currently amended). A guideway for a bearing, comprising: a hardened steel layer; and a substrate attached to said hardened steel layer, said substrate comprising a material having a bulk density no greater than about 60 percent that of said hardened steel layer, and said substrate further having a specific stiffness at least 50 percent greater than that of said hardened steel layer.

Claim 17 (original). The guideway of claim 16, wherein said substrate comprises a composite material comprising at least one ceramic material.

Claim 18 (canceled).

Claim 19 (currently amended). The guideway of claim 18 16, wherein said substrate lightweight metal comprises beryllium.

Claim 20 (currently amended). The guideway of claim 18 16, wherein said substrate lightweight metal comprises an alloy comprising beryllium and aluminum.

Claim 21 (canceled).

Claim 22 (canceled).

Claim 23 (original). The guideway of claim 16, wherein said substrate comprises at least one ceramic material selected from the group consisting of silicon carbide, boron carbide, aluminum nitride, silicon nitride, aluminum oxide and zirconium dioxide.

Claim 24 (original). The guideway of claim 23, wherein said silicon carbide comprises reaction-formed silicon carbide.

Claim 25 (original). The guideway of claim 16, wherein said hardened steel comprises tool steel.

Claim 26 (canceled).

Claim 27 (new). The stage of claim 1 wherein said guideway is attached permanently to said chassis at said land.

Claim 28 (new). The stage of claim 27 wherein said guideway is attached to said chassis at said land with a solder comprising tin, silver and titanium.

Claim 29 (new). The linear guideway of claim 8 wherein said bond permanently attaches said hardened steel body to said substrate body at said bonding surface.

Claim 30 (new). The linear guideway of claim 8 wherein said composite material has a specific stiffness at least 50 percent greater than that of said hardened steel body.

Claim 31 (new). The guideway of claim 16 wherein said steel layer comprises at least one surface intended to be in contact with a contact-type bearing, wherein said at least one surface defines a linear path for travel of said bearing, and wherein said substrate is permanently attached to said steel layer by an adhesive.